

SI
Mc-2, Payette

FILE COPY.

METHODS OF CUTTING IN WESTERN YELLOW PINE

PAYETTE NATIONAL FOREST

PROGRESS REPORT

1913.

E. R. Hodson.

SI
Mc-2, Payette.

May 16, 1914.

PROGRESS REPORT, 1913.

This project deals with different methods of cutting applicable to Western Yellow pine in Idaho and the object is to determine the most suitable method under the different conditions in that region.

Importance of Yellow Pine:

An idea of the importance of the Yellow pine type may be gained from the comparison of the estimate with the entire stand in District 4. 23 percent of the total stand is Yellow pine and foots up to 9,596,000 M. feet B.M. 68 percent of all the Yellow pine in the District is found on 7 forests in Idaho and the bulk of it on 5 forests. The total for the Idaho part is 6,489,737 M. Feet B.M.

Original Plan:

It was originally intended to carry out the cutting in connection with a Forest Service logging project on Carpenter Creek. This plan, however, fell through because of the inability to contract the logs and later the area was included in a sale to the Michigan-Idaho Lumber Company.

It is now planned to locate fifteen, five acre permanent sample plots or larger plots if the character of the stand makes it desirable, on sale areas before cutting;

a set of three plots each for (1) Group selection cutting, where all merchantable trees will be marked on irregular patches or groups not to exceed one acre in extent. These groups should cover about half of the area of the plot, and the spaces between groups should be at least half as wide at the narrowest point as the average diameter of the groups; (2) Scattered selection cutting, where individual mature trees will be selected for cutting throughout the stand, taking in all about one-half of the entire merchantable stand, (3) Strip cutting, where all merchantable trees will be marked for cutting on strips about 2 to 3 chains wide, leaving intermediate strips of two chains undisturbed, (4) Clear cutting with scattered seedtrees, where all merchantable trees will be marked for cutting, except certain individuals left for seed. The seedtrees should number from 2 to 5 per acre, the number depending upon the character of the seedtrees selected, and their apparent seed-producing capacity, as well as upon the amount and size of the young growth present on the ground. (5) Clear-cutting with blocks or groups of seedtrees. Here small compact groups will be reserved for seed, each such group containing two or three good seedtrees, together with the incidental suppressed intermediate and small trees. One or two such groups should be located on each acre, and so selected as

to secure small compact groups of thrifty trees well suited to withstand wind damage. The main purpose of this method is to eliminate wind damage and to have only such trees in the groups as will successfully hold over for another rotation.

As mentioned above, three plots are planned for each method of cutting. These plots should be located in the three characteristic topographical sub-types in the Yellow pine; i.e. (1) Ridge and south slope, (2) Bench, basin or flat, and (3) North slope. The first of these is usually pure yellow pine, in rather open stands of poor quality, and reproduction is often poor on account of the dryness of the site. The Yellow pine flats usually have practically a pure stand of heavy, large trees of fair quality, and with good conditions for reproduction. The north slope sub-type, however, has usually the longest clearest stems of yellow pine. The size of the timber is not remarkable, and there is usually a considerable admixture of Douglas fir and White fir with the yellow pine. Thus the problem of competition of inferior species with the Yellow pine is quite acute. The conditions in these three sub-types are so different and the problems of each are sufficiently distinct to warrant separate treatment of each. Therefore, it is suggested that a separate series of plots be established in each.

These three groups of plots, for trial of different methods on the three sub-types mentioned above, will be

located as close together as practicable, in order to secure uniform conditions for comparison of methods as far as possible. An isolation strip of at least one chain will be allowed around each plot, and this strip be treated the same as the plot itself, so that the conditions immediately surrounding it will be uniform with the plot itself, and thus will not affect the results.

On each plot all of the trees will be measured, located and mapped before cutting commences. All trees over 4" D.B.H. will be designated on the map by serial numbers and recorded as to diameter, tree class, height and merchantable length. Smaller trees will be indicated by a dot on the map, and recorded simply as seedling tallies in the notes. Within each plot, at least two reproduction plots will be located covering at least 500 square feet each, laid out in whatever shape is most convenient on the ground. On these all seedlings should be located, mapped and recorded by height classes, and a careful description of ground cover, and soil conditions should be made for each reproduction plot. This will furnish a permanent record of conditions and serve as a basis on which to determine any changes in ground cover, humus or soil which may result from the cutting.

In the record of each plot there will be three parts: (1) Map or diagram (Without use of colors in order

that it may be readily duplicated), (2) Tabulated data and (3) Descriptive data.

Work Done on the Ground:

During 1913, 3 plots of 5 acres each were established on Carpenter Creek and cut over by the seed-tree method. One of these plots was on the southeast slope, another on a north slope and the third represents basin or bench conditions. On each of these plots were established two reproduction plots designated "A" and "B", each containing 500 square feet.

Each of these plots was measured and mapped, all the trees above 4 inches D.B.H. being recorded and shown by number on the map. Trees under this size and 5 feet in height appear on the maps as dots.

Description of Plots:

Plot No. 1.

Carpenter Creek, Corner 1, 3,400 feet approximately up the creek north from the intersection with creek to the north line of Section 4, T. 8 N., R. 5 E., Boise Meridian. Altitude 3,700 feet; area 5 acres, (400'x544.5'); type, Yellow pine; slope, southeast 25°; density .4 variable, containing some one-fourth acre openings, rock granite; no outcrops on plot. Soil is gravelly, medium dry and loose.

Brush Cover. General character open, scattered and low, comprising the following species, Ceanothus,

Sanguinea, C. Velutinus, Smyphoricarpos, Physocarpus,
Oregon Grape, Amelanchier, Choke Cherry and Mock Orange.

Reproduction:

The largest conspicuous part is mostly in groups and is fairly abundant near the creek as shown by the map. The smaller seedlings are not seen except upon close inspection and their abundance is indicated by the reproduction plots "A" and "B". The total stand per acre is 14,346 board feet of which 79% is marked for cutting.

Remarks:

This plot is located on the west side of the creek at the first gulch above the Michigan-Idaho Lumber Company's camp. It is about one-half mile above the camp site. The corners are marked with the project designation, Mc-2, the number of the plot, the number of the corner and date. Witness trees are marked the same way. The corners are stakes.

REPRODUCTION PLOT

Designation

SI
Mc-2, Payette, (Plot #1, Reproduction Plot A).

Location

Payette National Forest, Idaho

T. 9 N., R. 5 E., Boise Meridian, approximately Section 28.

South Fork of Payette River on Carpenter Creek.

(See map of Plot #1, Mc-2)

Descriptive Data

Plot faces south on a slope of 20° , soil granite gravel loam, loose and dry. Absolute altitude 3,700 feet, relative altitude 20 feet above Carpenter Creek. Pure Yellow pine type, no high brush on plot and very little grass. Low scattered shrubs are: Symphoricarpos, Oregon grape, Spiraea, rose, Kunzia tridentata and one clump of Ceanothus sanguinea.

Site open to full sunlight; the seed trees near being so high that they do not greatly affect the light on the plot.

The plot is 50 x 10 feet or 500 square feet. It contains 15 seedlings counting the groups as one seedling each or 31 seedlings all told.

All the seedlings, with one exception (#14) are two years old having germinated the spring of 1912.

This data obtained September 9, 1913.

Tabular Data.

Reproduction Plot A.

Number of Seedlings	Yellow Pine (Pinus ponderosa)	
	First Count 9/9/13	
	Height Inches	Age Years
1	3	2
2	3	2
3	2½	2
4	3½	2
5	3½	2
6	3½	2
7	3½	2
8	3½	2
9	3½	2
10	3½	2
11	3½	2
12	4	2
13	3	2
14	11	7
15	3	2
16	3	2
17	3	2
18	2½	2
19	2½	2
20	2½	2
21	3	2
22	4	2
23	3½	2
24	3½	2
25	3½	2
26	3½	2
27	4	2
28	3	2
29	3	2
30	3½	2
31	2½	2

Graphic Data

See accompanying map Reproduction Plot A, Scale 5

ft. = 1 inch and also Map of Mc-2, Plot #1, Scale 100 ft. = 1 inch.

REPRODUCTION PLOT

Designation

SI
Mc-2, Payette, (Plot #1, Reproduction Plot B).

Location

Payette National Forest, Idaho.

T. 9 N., R. 5 E., Boise Meridian, approximately
Section 28.

South Fork Payette River, on Carpenter Creek,

(See map of Plot #1, Mc-2).

Descriptive Data

Slope gentle, 5% S.E. density .6, no dense brush.
The following species occur: Symphoricarpos, Oregon grape,
Amelanchier, Ceanothus sanguinea, a fair cover of herb and
grass, some yarrow, goldenrod and other plants. Granite
soil in a small flat bottomed gulch, absolute altitude
= 3,700 feet, relative altitude 50 feet above stream.

Surrounding Yellow pine is mostly in the "Black Jack"
stage. One Douglas fir seed tree to southwest of plot.

Type, pure Yellow pine.

Tabular Data

Reproduction Plot B.

Yellow Pine (Pinus ponderosa)			Douglas Fir (Pseudotsuga taxifolia)		
First count 9/9/13			First Count 9/9/13		
Number of Seedlings	Height Inches	Age Years	Number of Seedlings	Height Inches	Age Years
1	1½	1	1	3	2
2	7	5			
3	2	1			
4	2	1			
5	2	1			
6	2	1			
7	3	2			
8	46	17			
9	2½	2			
10	2½	2			
11	1½	1			
12	2	2			
13	2½	1			
14	8	8			

Graphic Data

See accompanying map, Reproduction Plot B, Scale
5 feet = 1 inch and also map of Mc-2, Plot #1, Scale 100
feet = 1 inch.

Plot No. 2.

Location:

Carpenter Creek. 2,544 feet up the creek from Corner 1 of Plot 1 to Corner 1 of Plot 2. Altitude is 3,750 feet approximately; area 5 acres (400' x 544.5'); type, Yellow pine; slope; North 35°; density .4; groups occur with great density; rock, granite, no outcrops on plot; soil, gravelly loam, considerable humus in places.

Brush Cover:

Very dense and high with occasional small openings. The following are the principal species; Ceanothus, Sanguinea, Physocarpus, Smyphoricarpus, a few willows, Acer glabrum, Oregon Grape. Eagle brake (*Pteridium aquilinum*) is abundant along the stream.

Reproduction:

A narrow border of the following species occur along the creek, *Alnus tenuifolia*, *Betula fontinalis*, *Cornus stolonifera*. Aspen is on the stream in two groups, one near the upper end and the other near the lower end. There are also two groups of Douglas fir, one near Corner 3 and the other near Corner 4.

The plot begins a short distance above where the creek swings to the west. Corner 1 is on the north side of the creek about 50 feet from it.

REPRODUCTION PLOT

Designation

SI
Mc-2, Payette (Plot #2, Reproduction Plot A)

Location

Payette National Forest, Idaho,
T. 9 N., R. 5 E., Boise Meridian, approximately
Section 28.
South Fork of Payette River, on Carpenter Creek.
(See map of Plot #2, Mc-2).

Descriptive Data.

Slope 20° south, soil granite loam, gravelly.
Brush scattered: Symphoricarpos, thimbleberry, rose, Oregon
grape, Symphoricarpos and eagle brake are most abundant. Very
little grass is present. Some yarrow occurs also Equisetum
(The Equisetum indicates local seepage).

Density .8, abundant Yellow pine seed trees near.
An aspen group along the stream to the southwest is close
enough to affect it somewhat.

Absolute altitude = 3,700 feet, relative altitude,
along stream bottom.

The type is pure Yellow pine.

Tabular Data

Reproduction Plot A.

Number of Seedlings	Yellow Pine	
	(Pinus ponderosa)	
	First count, 9/10/13	
	Height	Age
	Inches	Years
1	23	15
2	21 $\frac{1}{2}$	2
3	24	11
4	22	12
5	28	14
6	2	2
7	44	14
8	48	14

Graphic Data

See accompanying map Reproduction Plot A, Scale
5 feet = 1 inch and also map of Mc-2, Plot #2, Scale 100
feet = 1 inch.

REPRODUCTION PLOT

Designation

SI
Mc-2, Payette (Plot #2, Reproduction Plot B).

Location

Payette National Forest, Idaho.

T. 9 N., R. 5 E., Boise Meridian, approximately
Section 28.

(See Map of Plot #2, Mc-2).

Descriptive Data

A granite loam soil of a loose, gravelly character.
Brush cover characterized by medium dense ninebark (*Physocarpus*)
with scattering *Symphoricarpos* and *Amelanchier* groups.

Willow, maple (*Acre glabrum*) and *Ceanothus sanguinea*
occur outside of the plot nearby. Some grass, yarrow, *Galium*
and meadow rue on plot. Density, open.

One Yellow pine seed tree 8 feet south of plot,
others more distant, absolute altitude 3,700 feet. Relative
altitude 50 feet above stream.

Slope, north.

Type, Yellow pine.

Tabular Data

Reproduction Plot B.

Number of Seedlings	Yellow Pine (Pinus ponderosa)	
	First Count 9/10/13	
	Height Inches	Age Years
1	4	6
2	5½	6
3	8	6
4	8	6
5	3	6
6	3	6
7	3½	6
8	2	1
9	2½	6
10	4	6
11	2	2
12	1½	1
13	2½	2
14	2½	2

Graphic Data

See accompanying map, Reproduction Plot B, Scale
5 feet = 1 inch and also map of Mc-2, Plot #2, Scale 100 feet
= 1 inch.

Plot No. 3.

Location

Corner 1. 325 feet northeast of Corner 2, Plot 2. It is on the north side of the creek and about 100 feet from it. Altitude, 3,900 feet, area 5 acres (400' x 544.5'); type, Yellow pine, (basin slopes mostly to the northwest 5°, part of the area level), density .3; rock, granite; no outcrops on plot. Soil, gravelly loam, loose and fairly deep.

Brush Cover:

Most of the area is covered by large dense groups of the following species: *Vica carpo*, *Ceanothus*, *Sanguinea* *C. velutinus*, *Amelanchier*, *Symphoricarpos* and a number of others. Eagle Brake also covers the part of the area not covered by the brush.

Reproduction:

Very abundant, conspicuous in groups and single trees. Total stand 20,164 board feet per acre with 91% cut out.

Remarks:

This plot is located at the head of the continuous timber body on Carpenter Creek and at the spring where the stream rises. It is characterized by a very open stand of practically all mature timber.

REPRODUCTION PLOT

Designation:

Mc-2, Payette (Plot #3, Reproduction Plot A).

Location:

Payette National Forest, Idaho.

T. 9 N., R. 5 E., Boise Meridian, approximately
Section 28.

South Fork of Payette River, on Carpenter Creek
(See Map of Plot #3, Mc-2).

Descriptive Data.

In a level basin at the head of a stream.
Soil granite, gravelly loam, cover, dense eagle brake
(*Pteridium aquilinum*), scattered *Symphoricarpos*,
Amelanchier, *Physocarpos* and a few other plants.

Density .4. Several Yellow pine and one
Douglas fir seed-tree nearby.

Reproduction is not generally abundant in this
part of Plot #3. The stand is mature and quite open but for
some reason seedlings have failed to catch as they have in
the higher parts of the area. This reproduction plot
represents conditions on one acre or one-fifth of the
major plot.

Absolute altitude = 3,800 feet, relative altitude
near spring at head of stream.

The type is pure Yellow pine.

Tabular Data:

Reproduction, Plot A.

Yellow Pine				Douglas Fir			
:(Pinus ponderosa):				:(Pseudotsuga taxifolia):			
:Seedlings: 1st count 9/10/13:				:Seedlings: 1st Count 9/10/13:			
: Height :		: Age :		: Height :		: Age :	
: Inches :		: Years :		: Inches :		: Years :	
: 1 :	22 :	14 ::	1 :	19 :	17 :		
: 2 :	28 :	14 :	2 :	3 $\frac{1}{2}$:	4 :		
: 3 :	27 :	14 :	3 :	19 :	13 :		
: 4 :	32 :	14 :					
: 5 :	25 :	14 :					
: 6 :	36 :	14 :					
: 7 :	37 :	14 :					
: 8 :	18 :	14 :					
: 9 :	13 :	14 :					
: 10 :	10 :	14 :					
: 11 :	37 :	20 :					
: 12 :	47 ::	14 :					

Graphic Data:

See accompanying map, Plot A, Scale 5 feet = 1 inch
and also map of Mc-2, Plot #2, Scale 100 feet = 1 inch.

REPRODUCTION PLOT

Designation:

SI
Mc-2, Payette (Plot #3, Reproduction Plot B).

Location:

Payette National Forest, Idaho.

T. 9 N., R. 5 E., Boise Meridian, approximately
Section 28, South Fork of Payette River on Carpenter Creek.
(See Map of Plot #3, Mc-2).

Descriptive Data:

Slope gentle northwest 5°, granite soil, gravelly
and fairly dry, cover largely grass with scattered Symphori-
carpos and apocynum . One clump of Ceanothus and a few
Oregon Grape. Much brush on areas outside of plot.

Density .3. Scattered seed-trees, all Yellow pine.

Reproduction is abundant on this part which
represents four acres or four-fifths of the major plot.
The large stand is mature and very open.

Absolute altitude = 3,900 feet, relative altitude
100 feet above spring at head of stream.

The type is pure Yellow pine.

Reproduction Plot B.

: Number : Yellow pine : Number : Yellow Pine :				: of : (Pinus ponderosa) : of : (Pinus ponderosa) :			
: Seedlings: First Count 9/10/13 : Seedlings: First Count 9/10/13 :				: Height : Age : Height : Age :			
: : Inches : Years : : Inches : Years :				: : Inches : Years : : Inches : Years :			
1	19½	14	44	15	14		
2	27	14	45	17½	14		
3	17	14	46	2	2		
4	2½	2	47	1½	1		
5	37	14	48	1½	1		
6	15	12	49	13	14		
7	2½	2	50	12	14		
8	7	8	51	2	2		
9	6	8	52	2½	8		
10	7	8	53	13	14		
11	6	8	54	24	14		
12	7	8	55	22½	16		
13	5	8	56	13	14		
14	29	14	57	9	14		
15	14	14	58	15	14		
16	8	8	59	36	14		
17	6½	8	60	5	8		
18	5½	8	61	19	14		
19	24	14	62	24	16		
20	3	2	63	13	14		
21	2	2	64	12	14		
22	2	2	65	11	14		
23	12½	12	66	36	18		
24	20½	14	67	7	8		
25	28	14	68	21	14		
26	2	1	69	3	2		
27	10½	8	70	14	14		
28	2	2	71	8½	8		
29	52	14	72	11½	8		
30	10	14	73	2	1		
31	2	1	74	2	1		
32	2	1	75	2	1		
33	14	14	76	2	1		
34	2½	2	77	2	1		
35	3	2	78	3	2		
36	3	2	79	14	14		
37	3	2	80	18	14		
38	3	2	81	19	14		
39	3	2	82	22	14		
40	2	2	83	22	14		
41	28	14	84	7½	10		
42	32	14	85	2½	2		
43	21½	14	86	16	14		

Graphic Data:

See accompanying map, Plot B, Scale 5 feet = 1 inch and also map of Mc-2, Plot #3, Scale 100 feet = 1 inch.

Table 1, summarizes the stand, cut, number of trees, etc. on the Plots.

TABLE 1.

SUMMARY

Amounts Cut and Left on all PlotsBased on Both Volume and Number of Trees

enter and Poorman Creeks, Payette National Forest.

Seed Tree Method, 1913.

Volume							Number of Trees						
Plot	Area	Total	Average	Average	Average	Percent	Total	No. of Trees per Acre			Average		
Number	Acres	Stand	Stand	Cut per	Amount	of Cut	Number	4" D.B.H. and over			Feet B. M.		
:	:	per	per A.	Acre	Left	Ft. B.M.	of	Total	Number	Number	Percent	Per Tree of	
:	:	Plot	Ft. B.M.	Ft. B.M.	per A.	:	Trees	Number	Cut	Left	cut No.	the trees cut	
:	:	Ft. B.M.	:	:	Ft. B.M.	:	6" DBH	:	:	:	of Trees	:	
:	:	:	:	:	:	:	& over	:	:	:	:	:	
2	5	71,340	14,346	11,286	3,060	79	192	46.4	6.8	39.6	14.7	1,660	
2	5	82,420	16,484	15,392	1,092	93	106	21.2	6.8	14.4	32.1	2,264	
2	5	100,164	20,164	18,154	2,010	91	90	18.0	8.8	9.2	48.9	2,291	
1	20	302,380	15,119	11,347	3,772	75	484	24.2	7.5	16.7	31.0	2,016	
Averages			15,897	12,889	3,008	81	--	43.6	7.5	36.1	17.2	2,120	

Methods of Cutting:

While five methods are outlined in this project to be carried out on the plots, it is likely that the seed-tree method will be found most applicable to the better sites. From indications in old cuttings before the forest was put under administration and on sale areas after administration, the seed-tree method for north slopes, basins, and other places where there is abundance of advance reproduction, seems satisfactory. Where, however, the stand is naturally in groups with young growth and over-mature groups intermingled, the group selection method obviously should be the one followed unless the groups are of unusual size. It is believed that most any method of cutting where there is advance reproduction will be suitable. On ridges, south slopes and other dry sites, a most careful single tree selection cutting is indicated. In many places no cutting at all should be done unless the trees marked for cutting have groups of advance reproduction near them which will be released.

Future Work on the Project:

The twelve plots remaining for the other four methods should be mapped and marked as described in the plan. No further work will then be necessary until the re-measurement of the plots.

Maps:

With this report are maps of each of the plots showing trees above 4 inches in diameter by number and the sizes between 4 inches diameter and 5 feet high by dots. These maps also show the location within the plots of the two reproduction plots "A" and "B". Detailed maps are also attached of the two reproduction plots for each of the major plots. The scale of these latter plots is 5 feet to 1 inch and they show seedlings by number. Yellow pine is indicated by a dot and Douglas fir by a cross.

Elbert Hodson

Forest Examiner.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

MAP SHEET

SI
Mc-2 Payette No. Plot 1

Payette

National Forest.

Division

District

Block

T. 9 N

R. 5 E

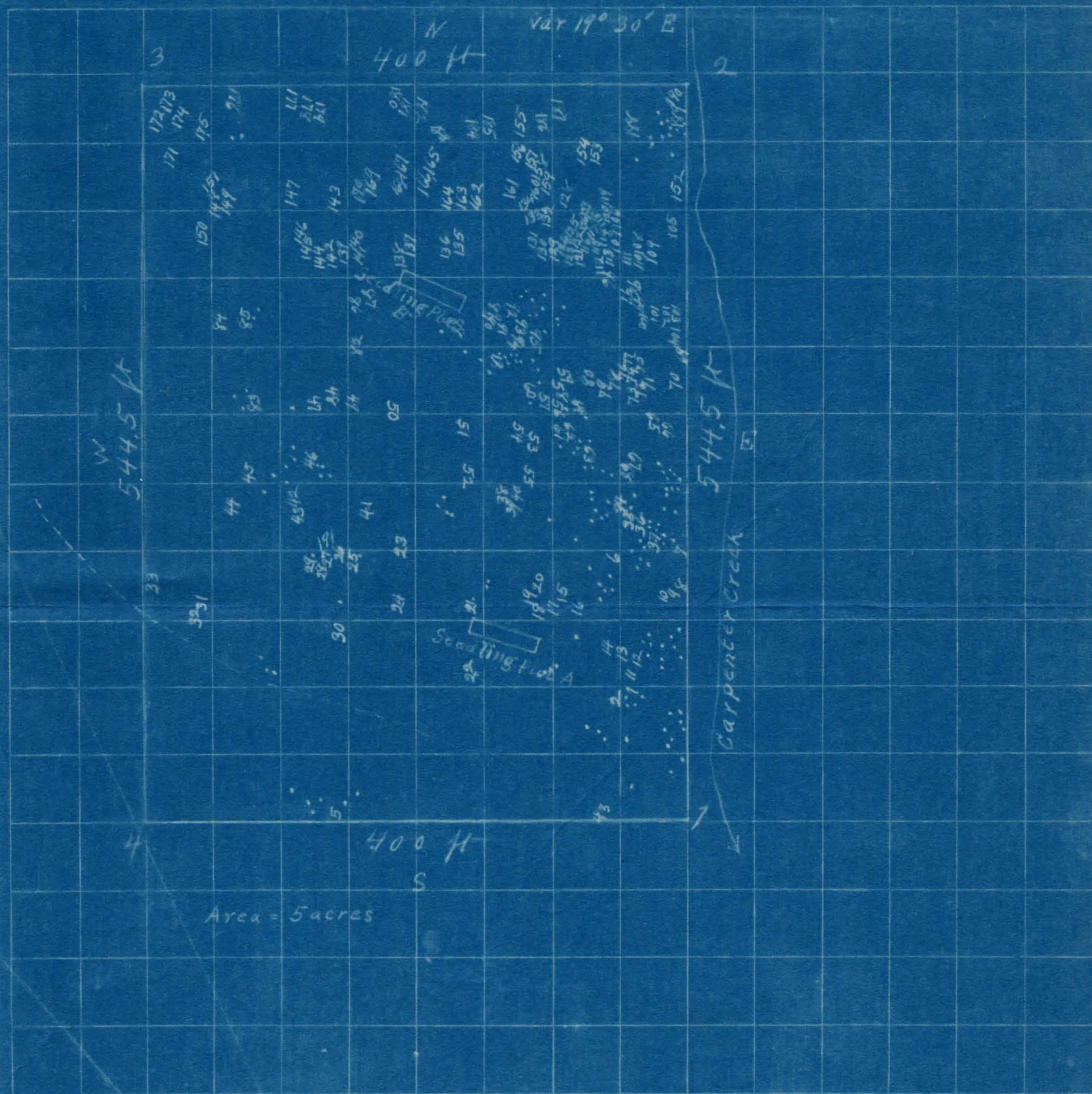
Boise M., Section approx 33

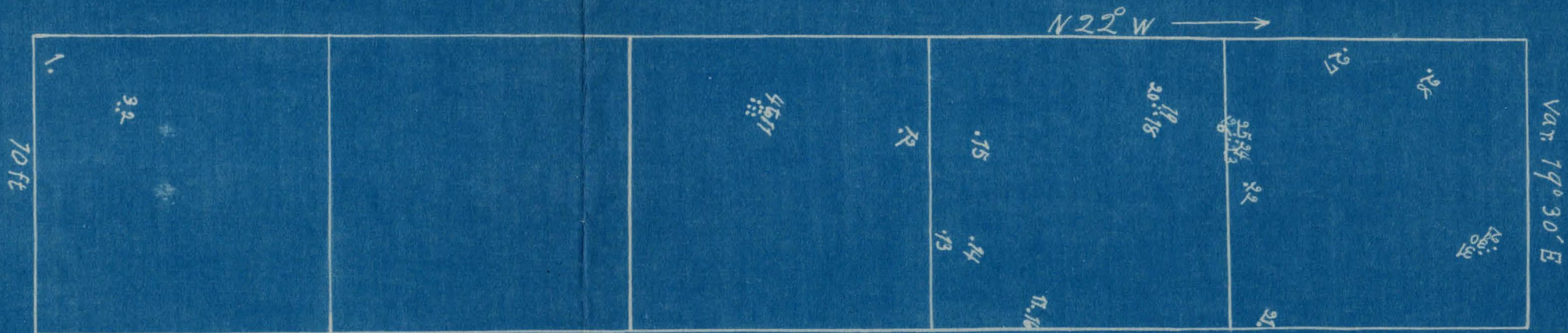
Quarter

Mapped by

E R Hodson 8/29/13

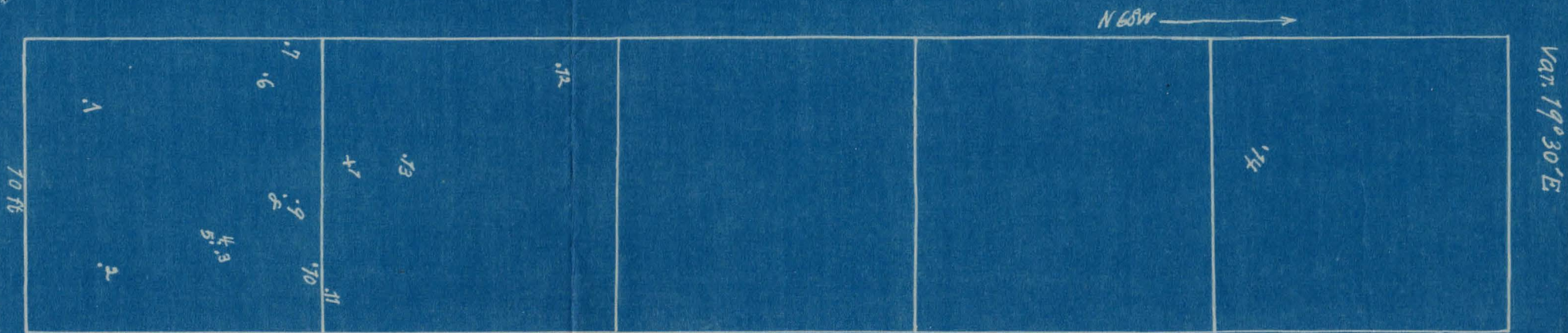
Scale:

1 inch to 100 ft
inches = 1 mile.



Scale 5 ft = 1 inch

50 ft
#1, Seedling Plot A



50 ft
#1, Seedling Plot B

UNITED STATES DEPARTMENT OF AGRICULTURE
 FOREST SERVICE

MAP SHEET

 SI
 Mc-2, Payette No. Plot #2

Payette

National Forest.

Division

District

Block

T. 4N

R. 5E

Boise

M., Section

approx 28

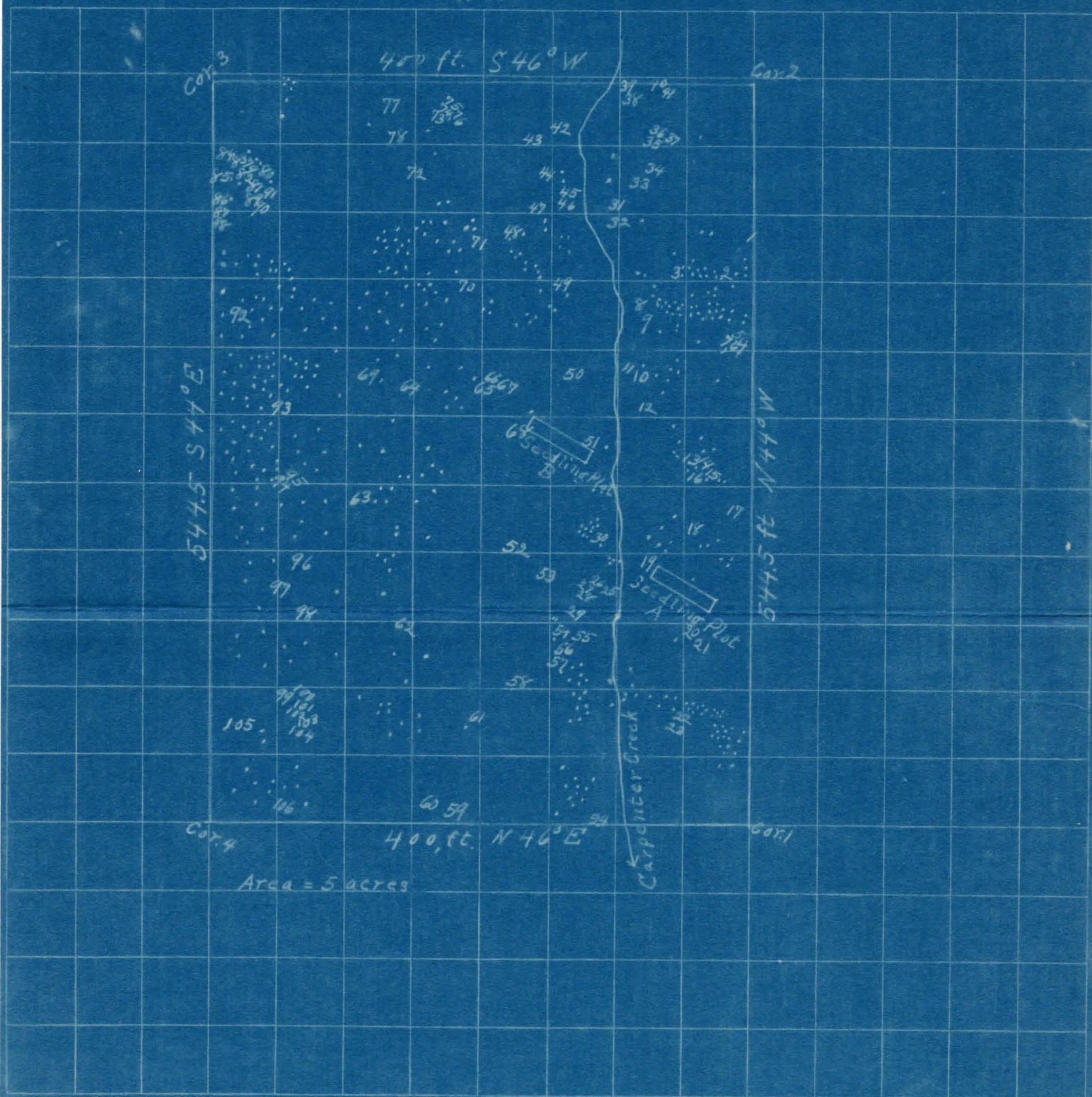
Quarter

Mapped by

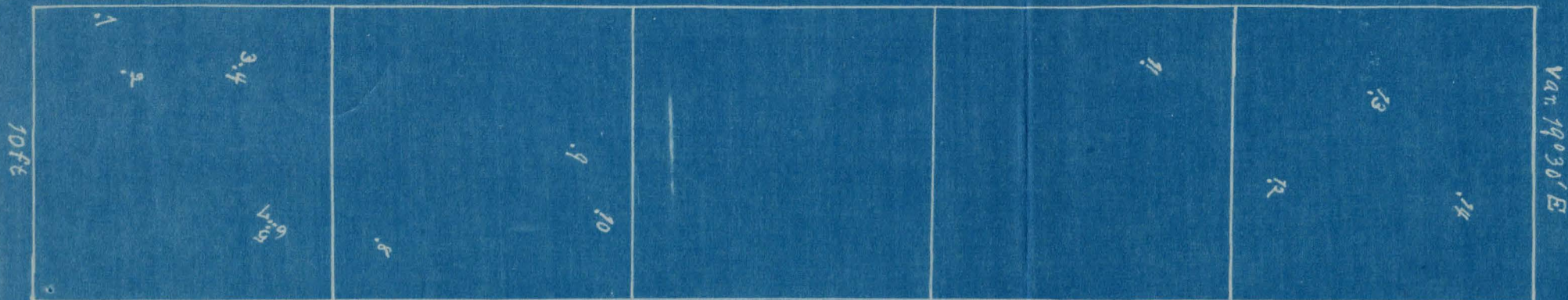
E. R. Hodson

7/6/13

Scale:

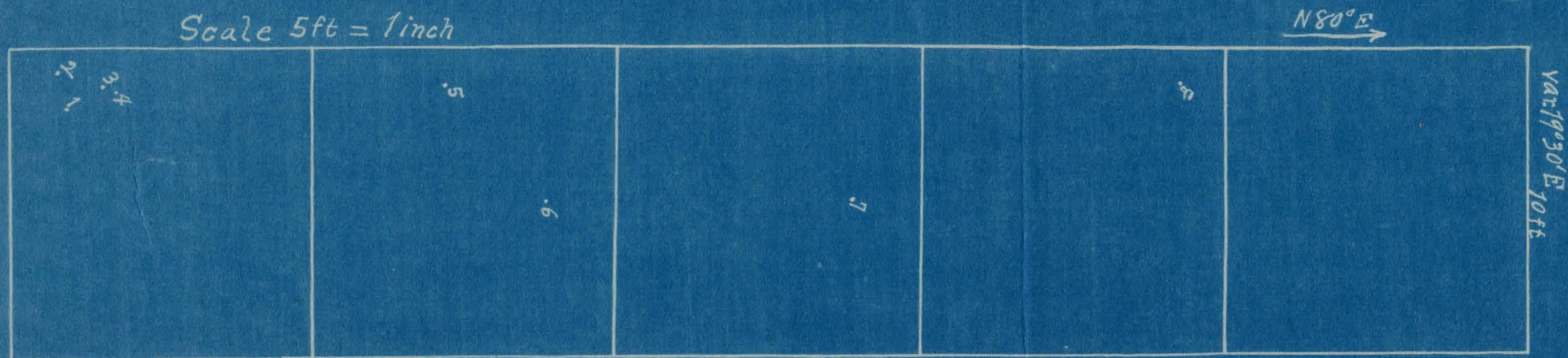
1 inch to 100 ft
inches = 1 mile.

Scale 50 ft = 1 inch



50 ft
#2, Seedling Plot B

Scale 5 ft = 1 inch



50 ft
#2, Seedling Plot A

UNITED STATES DEPARTMENT OF AGRICULTURE
 FOREST SERVICE

MAP SHEET

 SI
 Mc-2 Payette No. Plat #3

PAYETTE National Forest.

Division _____ District _____ Block _____

T. 9 N , R. 5 E Boise M., Section Approx. 27, Quarter _____

 Mapped by E. R. Hodson
 Traced. 225.

9/5/13

 Scale: 1 inch = 100 feet
 inches = 1 mile.
